

Abstract Submitted
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Optical rotation of few-ion crystals¹ ARPITA PAL, M BHATTACHARYA, Rochester Institute of Technology — Trapped ion crystals are of immense use in quantum simulation, information processing and metrology. The overwhelming number of investigations in such systems have targeted the linear vibrational motion of ion arrays and their normal modes. Recently, coherent control of a rotating two-ion crystal in a circularly symmetric potential was demonstrated experimentally [1], where angular momentum was imparted to the ions using time-periodic trap voltages. We theoretically consider instead the rotation of few-ion planar crystals using radiation pressure from an asymmetrically placed optical cooling beam. We expect our system to be useful for simulating quantum rotors and time crystals and for rotation sensing. [1] E. Urban et al., Phys . Rev. Lett. 123, 133202 (2019).

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